REMARKS/ARGUMENTS

The Office Action dated February 15, 2011, has been carefully reviewed and the following remarks are responsive thereto. As presented above, claims 1, 6, 12 and 16 have been amended. The amendments are based on the original specification and drawings, such as page 5, lines 8-16, page 7, lines 12-18 and page 9, lines 15-22 of the original specification and figures 3, 5 and 6 of the original drawings. Claims 2, 7, and 13 have been previously canceled. No new matter has been added.

Claims 1, 3-6, 8-12, 14-16, 18-21 remain pending upon entry of the present amendment. Reconsideration and allowance are respectfully requested.

Claim Rejections - 35 USC § 10

The Office Action maintained the rejection of claims 1, 3, 5, 16, 18, 20 and 21 under 35 U.S.C. 103(a) as being unpatentable over Li et al. (US Publication No. 2006/0182119 A1, hereinafter referenced as "Li") in view of Iwata et al. (US 7047316 B2, hereinafter referenced as "Iwata"). The rejection is respectfully traversed based on the above amendments of the claims.

Claim 1:

Amended claim 1 of the present application recites:

A method for realizing QoS guarantee in a MPLS network, comprising:

creating an individual QoS resource list in each edge router to record a resource state corresponding to a path, wherein the resource states of the paths from this edge router to all other edge routers in the same domain are recorded in said individual QoS resource list; and

each edge router assigning resources to a user terminal which makes a request based on said QoS resource list and then updating the QoS resource list correspondingly.

Li discloses a system and a method for implementing resource allocation in network communication, in which an QoS edge router (QER) list is formed by edge routers along a data flow path, but only the edge router connected with the destination terminal stores the QER list (see, e.g., abstract, paragraphs [0171]-[0177] and figure 5 of Li). Accordingly, claim 1 of the present application includes the following distinguishing technical features from Li:

"creating an individual QoS resource list in each edge router to record a resource state corresponding to a path, wherein the resource states of the paths from this edge router to all other edge routers in the same domain are recorded in said individual QoS resource list; and

each edge router assigning resources to a user terminal which makes a request based on said QoS resource list and then updating the QoS resource list correspondingly".

By these distinguishing technical features shown in claim 1 of the present application, the claimed invention solves the technical problem of how to efficiently and effectively allocate resources for a QoS guaranteed path by creating of individual QoS resource list in each edge router.

Iwata discloses a link state routing communication device allowing path precalculation satisfying the required quality of a connection and reducing the call blocking probability. According to Iwata, a path satisfying a connection request can be selected from a plurality of precalculated paths which are stored for each destination in a memory; the precalculated paths reflect the latest link resource information using the feasibility check operation or precalculated path update operation; and in a border node, summarized information is calculated based on precalculated paths (see, e.g., abstract of Iwata).

The applicants respectfully submit that Iwata fails to disclose or teach the above distinguishing technical features of claim 1.

First, as recited in amended claim 1 of the present application, an individual QoS resource list is created in **each** edge router to record a resource state corresponding to a path, and the resource states of the paths from this edge router to **all other** edge routers in the same domain are recorded in said individual QoS resource list. It can be seen that according to claim 1 of the present application, if there are N edge routers, E_1, E_2, ..., E_i, ..., E_N, in a domain of a MPLS network, an individual QoS resource list is created in each of the N edge routers, and in the edge router E_i among them, the resource states of the paths from the edge router E_i to the other N-1 edge routers in the same domain are recorded in the individual QoS resource list of E_i. Thus **if any of the edge routers receives a request from a user terminal, the edge router can always find a path to an egress edge router of the domain** (see, e.g., page 8, lines 2-6 and figure 6 of

the present application).

Iwata discloses the use of a plurality of precalculated paths for decreasing the blocking probability of connection setup, such as the precalculated paths from the border node 501 to the border nodes 503 and 505 (see, e.g., figure 13B of Iwata). However, Iwata does not teach "creating an individual QoS resource list in **each** edge router to record a resource state corresponding to a path, wherein the resource states of the paths from this edge router to **all other** edge routers in the same domain are recorded in said individual QoS resource list," as claimed in amended claim 1. For example, ***Iwata does not teach a precalculated path from the border node 503 to the border node 505***, and accordingly Iwata does not teach that the border node 503 stores precalculated paths from the border node 503 to the border nodes 501 and 505. This is also shown in figures 2 and 9 of Iwata, which involve the processing for the situation when ***a precalculated path is not found***. It can be seen that Iwata only teaches the precalculation of ***a plurality of*** paths, but does not teach the precalculation of the paths for **each** edge router that records the resource states of the paths from this edge router to **all other** edge routers in the same domain. Compared with the scheme disclosed in Iwata, claim 1 of the present application guarantees the QoS in a more efficient way.

Second, amended claim 1 of the present application recites that each edge router assigns resources to a user terminal which makes a request based on said QoS resource list and **then** updates the QoS resource list **correspondingly**. This shows that updates of the QoS resource list in claim 1 are based on the assignment of resources according to the QoS resource list.

In contrast, Iwata recites that "*The path resource information stored in the precalculated path resource information memory 322 is updated when the link resource information stored in the link resource information memory 31 is updated. Alternatively, it is periodically updated independently of the link resource information stored in the link resource information memory 31. The link resource information update section 21 updates the link resource information stored in the link resource information memory 31 when a change of corresponding link resource information is detected by comparing the received link resource information from the link resource information receiver 1 with the stored link resource information in the link resource information memory 31*" (see, e.g., column 7 lines 1-12 of Iwata). Further, Figures 2 and 9 of

Iwata show that **no** update operation performed for the path/link resource information after resources are allocated to a user terminal. Therefore, the process of updating the path/link resource information in Iwata is completely different from the method of updating the QoS resource list in amended claim 1.

Accordingly, Iwata does not teach or suggest that "each edge router assigning resources to a user terminal which makes a request based on said QoS resource list and then updating the QoS resource list correspondingly," as recited in amended claim 1 of the present application.

For the above reasons, Iwata does not cure the deficiencies of Li and does not teach or suggest the above-distinguished technical features of amended claim 1.

Further, the above-distinguished technical features of claim 1 are not disclosed or taught by the other documents cited in the Office Action:

Rabie et al (US Publication No. 2003/0076829 A1, hereinafter referenced as "Rabie") discloses a method of bandwidth management in a multiservice connection –oriented network which uses one or more overbooking factors and one or more overbooking models. The method allows an edge node which has received a connection request to accurately determine the bandwidth available on a given link in the network by ensuring that different overbooking models and different overbooking factors are normalized at the edge node (see, e.g., abstract of Rabie).

Kurose et al (US Publication No. 2003/0084089 A1, hereinafter referenced as "Kurose") discloses that in a data transfer apparatus, a transferring destination information reader reads information of a transferring destination terminal associated with a primary destination terminal based on a communication quality request to the primary destination terminal received from a source terminal. A resource reservation instructor gives instructions for a communication resource reservation for purposes of a communication of the quality request to the transferring destination terminal. A resource reserver determines whether or not a communication resource of the transferring destination terminal has been reserved based on the instructions by the resource reservation instructor, and responds a result of the determination thereof to the resource reservation instructor (see, e.g., abstract of Kurose).

Matsubara et al (US Patent No. 7,215,640 B2, hereinafter referenced as "Matsubara") discloses that for on-demand Quality of Service (QoS) transmission of packets, edge nodes update a TERMINAL-PORT TABLE as terminals log-on and then pass their node ID to each terminal that logs on. The nodes establish Quality of Service (QoS) assured pre-set paths through the WAN with conventional IP routing and accordingly update their NODE-PATH TABLE to provide links between the pre-set paths (see, e.g., abstract of Matsubara). Although several tables are disclosed in that reference, Matsubara fails to teach or suggest a table created in each edge router for recording the resource states of the paths from the edge router to all other edge routers in the same domain.

Therefore, Rabie, Kurose, and Matsubara fail to cure the deficiencies of Li and Iwata and do not teach or suggest the above-distinguished technical features of amended claim 1.

In addition, the distinguishing technical features of amended claim 1 are not common general knowledge in the art.

In summary, the cited references, alone or in combination, do not teach or suggest the above-distinguished technical features of amended claim 1. The applicants respectfully submit that the cited references do not provide any relative teachings for one of ordinary skill in the art to acquire the technical scheme recited in claim 1. Further, the applicants respectfully submit that it was **not-obvious** for one of ordinary skill in the art at the time of the invention to modify Li by using any existing technology known in the art, to solve the problem resolved by the claimed invention. Accordingly, claim 1 conforms to the provisions of 35 U.S.C. 103.

As such, the applicants respectfully submit that claim 1 is in condition for allowance.

Claims 3 and 5:

Since independent claim 1 complies with the requirements of non-obviousness, the dependent claims 3 and 5, which depend on claim 1, are also in conformity with the requirements of non-obviousness, and thus are allowable.

Claim 16:

Claim 16 of the present application is an apparatus implementation of the method

claimed in claim 1 and comprises all the elements of claim 1.

As stated above, claim 1 complies with the requirements of non-obviousness. For the similar reasons discussed with respect to claim 1 above, claim 16 is also in conformity with the requirements of non-obviousness, and thus is allowable.

Claim 18:

Since independent claim 16 complies with the requirements of non-obviousness, the dependent claim 18, which depends on claim 16, is also in conformity with the requirements of non-obviousness, and thus is allowable.

Claim 20:

Since independent claim 16 complies with the requirements of non-obviousness, the dependent claim 20, which depends on claim 16, is also in conformity with the requirements of non-obviousness, and thus is allowable.

Claim 21:

Claim 21 of the present application defines an MPLS network for realizing QoS guarantee, the MPLS network comprising the edge router defined in any one of claims 16-20. So, claim 21 at least comprises all the elements of independent claim 16.

As stated above, claim 16 complies with the requirements of non-obviousness. For the similar reasons discussed with respect to claim 16 above, claim 21 is also in conformity with the requirements of non-obviousness, and thus is allowable.

The Office Action maintained the rejection of claims 6, 10 and 11 under 35 U.S.C. 103(a) as being unpatentable over Li in view of Rabie and Iwata. The rejection is respectfully traversed based on the above amendments of the claims.

Claim 6:

Amended claim 6 of the present application defines a method for establishing a QoS data path in a MPLS network, comprising: a user terminal sending a QoS resource request to an

ingress edge router; said edge router determining information of a path to an egress edge router of the QoS resource request; said ingress edge router determining whether the resource request is accessed or rejected based on comparing available resources of the requested resources corresponding to the path recorded in a QoS resource list with bandwidth resources requested in said resource request; and when the resource request is determined to be accessed, updating said QoS resource list correspondingly; and wherein said QoS resource list is created in each edge router, and the resource states of the paths from this edge router to all other edge routers in the same domain are recorded in said QoS resource list.

It can be seen that claim 6 includes elements of amended claim 1.

As stated above, claim 1 complies with the requirements of non-obviousness. For the similar reasons discussed with respect to claim 1 above, claim 6 is also in conformity with the requirements of non-obviousness, and thus is allowable.

Claim 10:

Since independent claim 6 complies with the requirements of non-obviousness, the dependent claim 10, which depends on claim 6, is also in conformity with the requirements of non-obviousness, and thus is allowable.

Claim 11:

Since independent claim 6 complies with the requirements of non-obviousness, the dependent claim 11, which depends on claim 6, is also in conformity with the requirements of non-obviousness, and thus is allowable.

The Office Action maintained the rejection of claims 12, 14 and 15 under 35 U.S.C. 103(a) as being unpatentable over Kurose in view of Li and Iwata. The rejection is respectfully traversed based on the above amendments of the claims.

Claim 12:

Amended claim 12 of the present application defines a method for terminating QoS data transmission in a MPLS network, comprising: an ingress edge router receiving a resource

releasing request from a user terminal; said ingress edge router releasing the resources occupied by said user terminal; and then said ingress edge router correspondingly modifying its QoS resource list which records a resource state corresponding to a path; and wherein said QoS resource list is created in each edge router, and the resource states of the paths from this edge router to all other edge routers in the same domain are recorded in said QoS resource list.

It can be seen that claim 12 of the present application includes all elements of amended claim 1.

As stated above, claim 1 complies with the requirements of non-obviousness. For the similar reasons discussed with respect to claim 1 above, claim 12 is also in conformity with the requirements of non-obviousness, and thus is allowable.

Claim 14:

Since independent claim 12 complies with the requirements of non-obviousness, the dependent claim 14, which depends on claim 12, is also in conformity with the requirements of non-obviousness, and thus is allowable.

Claim 15:

Since independent claim 12 complies with the requirements of non-obviousness, the dependent claim 15, which depends on claim 12, is also in conformity with the requirements of non-obviousness, and thus is allowable.

The Office Action maintained the rejection of claims 4 and 19 under 35 U.S.C. 103(a) as being unpatentable over Li in view of Iwata and Matsubara. The rejection is respectfully traversed based on the above amendments of the claims.

Claim 4:

Since independent claim 1 complies with the requirements of non-obviousness, the dependent claim 4, which depends on claim 1, is also in conformity with the requirements of non-obviousness, and thus is allowable.

Claim 19:

Since independent claim 16 complies with the requirements of non-obviousness, the dependent claim 19, which depends on claim 16, is also in conformity with the requirements of non-obviousness, and thus is allowable.

The Office Action maintained the rejection of claims 8 and 9 under 35 U.S.C. 103(a) as being unpatentable over Li in view of Rabie, Iwata and Matsubara. The rejection is respectfully traversed based on the above amendments of the claims.

Claim 8:

Since independent claim 6 complies with the requirements of non-obviousness, the dependent claim 8, which depends on claim 6, is also in conformity with the requirements of non-obviousness, and thus is allowable.

Claim 9:

Since claim 8 complies with the requirements of non-obviousness, the dependent claim 9, which depends on claim 8, is also in conformity with the requirements of non-obviousness, and thus is allowable.

Conclusion

In light of the above, the Applicants submit that the application is in condition for allowance and respectfully request that a Notice of Allowance be issued in this case. The Applicants also request that the Office telephone the attorneys of record in the event a telephone discussion would be helpful in advancing the prosecution of the present application.

Respectfully submitted,

/derek. c. stettner/

Derek C. Stettner
Reg. No. 37,945

File No. 026613-9004-00
Michael Best & Friedrich LLP
100 East Wisconsin Avenue
Milwaukee, Wisconsin 53202-4108
(414) 271-6560